REMARKS/ARGUMENTS

Applicant has reviewed and considered the Office Action dated June 11, 2007 and the cited references therein. Claims 1-8, 10-21, 23-31 and 33-65 are pending in the present application.

Rejection under 35 U.S.C. §102 and §103

Claims 1-3, 5-11, 13, 14, 33-38, and 40-42 are rejected under 35 U.S.C. §102(e) as being anticipated by Hossain et al. (U.S. Patent No. 6,242,785). Claims 4, 10, 12, 15-32, 39, and 44-64 are rejected under 35 U.S.C. §103(a) as being unpatentable over Hossain et al. (U.S. Patent No. 6,242,785) in view of Wallace et al. (U.S.Patent No. 6,013,553). Applicant respectfully traverses the rejection for at least the following reasons.

Applicant has amended independent claims 1, 15, 24, 33, 44 and 55 to patentably distinguish the present invention over the cited prior art. Claims 1, 15 and 24 have been amended to include the formation of a channel located between the source electrode and the drain electrode. Claims 1, 15 and 24 have been further amended to include wherein at least one of the source electrode and the drain electrode forms a Schottky contact or Schottky-like region with the semiconductor substrate and the channel. Prior to the amendment, at least one of the source electrode and the drain electrode formed a Schottky contact or Schottky-like region only with the semiconductor substrate, not the channel.

Claims 33, 44 and 55 have been amended to include the formation of a channel located between the source electrode and drain electrode that were formed by reacting the metal with the exposed semiconductor substrate. Claims 33, 44 and 55 have been further amended to include wherein at least one of the source electrode and the drain electrode forms a Schottky contact or Schottky-like region with the semiconductor substrate and the channel. Prior to the amendment, Schottky or Schottky-like source electrode and drain electrode were formed only on the semiconductor substrate, not with the channel.

The addition of the language that at least one of the source electrode and the drain electrode forms a Schottky contact or Schottky-like region with both the semiconductor substrate and the channel patentably distinguishes Claims 1, 15, 24, 33, 44 and 55 over the cited prior art.

Specifically, Hossain discloses a method of manufacturing a semiconductor device. Moreover, Hossain discloses a method of manufacturing an impurity-doped source and drain Metal Oxide Semiconductor Field Effect Transistor (MOSFET) semiconductor device. Hossain

does not disclose or teach a semiconductor device manufacturing method that provides a source electrode and a drain electrode in contact with the semiconductor substrate and proximal to the gate electrode wherein at least one of the source electrode and the drain electrode forms a Schottky contact or Schottky-like region with the semiconductor substrate and the channel as required by amended independent claims 1, 15 and 24of the present invention. Further, Hossain does not disclose or teach reacting the metal with the exposed semiconductor substrate such that a channel is formed between a source electrode and a drain electrode and wherein at least one of the source electrode and the drain electrode forms a Schottky contact or Schottky-like region with the semiconductor substrate and the channel as required by independent claims 33, 44, and 55 of the present invention.

A review of Hossain, in particular Figure 12 element 30, Figures 9-13 element 40, Figure 12 element 38, and column 9 lines 20-45 of the specification, shows that Hossain does not disclose or teach a semiconductor device manufacturing method wherein the source electrode and drain electrode form a Schottky contact or Schottky-like region with the semiconductor substrate and the channel.

To begin, Hossain teaches that the source and drain regions (Figure 12, element 30) are formed by introducing impurity distributions into the substrate 10 by two impurity introduction processes (Figure 1, element 18 and Figure 6, element 28, respectively) whereby both impurity introduction processes consist of an ion implantation process. One of ordinary skill in the art understands that when the source and drain regions 30 are formed from ion implantation technology, as taught by Hossain, they are impurity doped source-drain semiconductor regions and are not comprised of metal. Furthermore, one of ordinary skill in the art understands that impurity doped source-drain regions 30 do not form a Schottky contact or Schottky-like region with the channel of the device, but rather form a p-n junction at the interface between the source-drain region and the channel.

Hossain further teaches that source and drain silicides (Figure 13, el. 46) are formed on upper surfaces of source and drain regions 30. As discussed in the background section, for impurity doped source and drain transistors,

> *"...sidewall spacers are useful in forming a self-aligned silicide, or salicide, subsequent to source and drain formation. Salicides are formed in order to provide relatively broad-area, low resistivity (and therefore low-resistance) contact to the source, drain, and gate of a transistor (Column 1, lines 50-55).*

Therefore, the purpose of the source and drain silicides 46 is to provide a low-resistance contact to the source and drain regions 30. It is clear from Fig. 13, that while the source and drain silicides 46 do form Schottky contacts to the source and drain regions 30, the source and drain silicides 46 do not form Schottky contacts or Schottky-like regions with the channel of the device. One with ordinary skill in the art understands that the source and drain silicides 46, as taught by Hossain, do not contact the channel and therefore do not form a Schottky contact or Schottky-like region with the semiconductor substrate 10 and the channel as required by the present invention.

In summary, Hossain does not disclose or teach a process that provides a metal layer in contact with the semiconductor substrate and the channel of the device. As a result, Hossain does not disclose or teach that at least one source electrode and drain electrode form a Schottky contact or Schottky-like region with the semiconductor substrate and the channel, but rather teaches an impurity-doped source-drain device, the source-drain regions forming a p-n junction with the semiconductor substrate and channel, not a Schottky contact or Schottky-like region with the semiconductor substrate as required by all independent claims of the present application.

The remaining claims also recite the features discussed above. Hossain fails to remedy the deficiencies. Thus, Applicant respectfully submits that claims 1-8, 10-21, 23-31 and 33-65 patentably distinguish over Hossain or Hossain in view of Wallace.

In view of the above, it is respectfully submitted that the present application is in condition for allowance. Reconsideration of the present application and a favorable response are respectfully requested.

If a telephone conference would be helpful in resolving any remaining issues, please contact the undersigned at 952-223-5250.

Respectfully submitted,

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